Abandoned Mines: Getting the Job Done

The well-earned reputation for adaptability and bringing to bear the necessary professional talents of the Abandoned Mine Lands Unit's (AMLU) was put to the test over the last three-plus years with completion in 2013 of its largest project yet, an inventory and remediation of historical abandoned mines on National Park Service (NPS) and Bureau of Land Management (BLM) lands in California.

The AMLU inventoried these legacy mines to gather information on the physical and environmental hazards, cultural significance, and the wildlife potential at each site. This information was necessary for land-management agencies, such as NPS and BLM, to prioritize sites for remediation, conduct assessments to comply with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA), and finally, fund and implement mine hazard remediation projects.

With funding from the American Recovery and Reinvestment Act (ARRA) of 2009, the NPS contracted with the AMLU for a $2.1 million, three-year inventory of abandoned mines on NPS lands, and the BLM provided a $1.5 million contract for inventory and remediation of physical hazards in popular Off-Highway Vehicle Recreation Areas. The approval in 2010 of BLM ARRA funding was based on the efficiency and cost effectiveness of using the AMLU's existing contracts for mine closure services. In fact, the BLM's contract called for closure of 150 hazardous mine features. Despite a short time frame to complete NEPA studies and tight wildlife restrictions on construction dates, the AMLU completed far more closures than originally budgeted, closing 323 features and inventorying an additional 387 features by the contract's close in fall 2012. Mine feature closures took place on lands including some of the most dangerous and heavily visited mine sites AMLU has inventoried. These sites also held among the best bat habitat logged by AMLU.

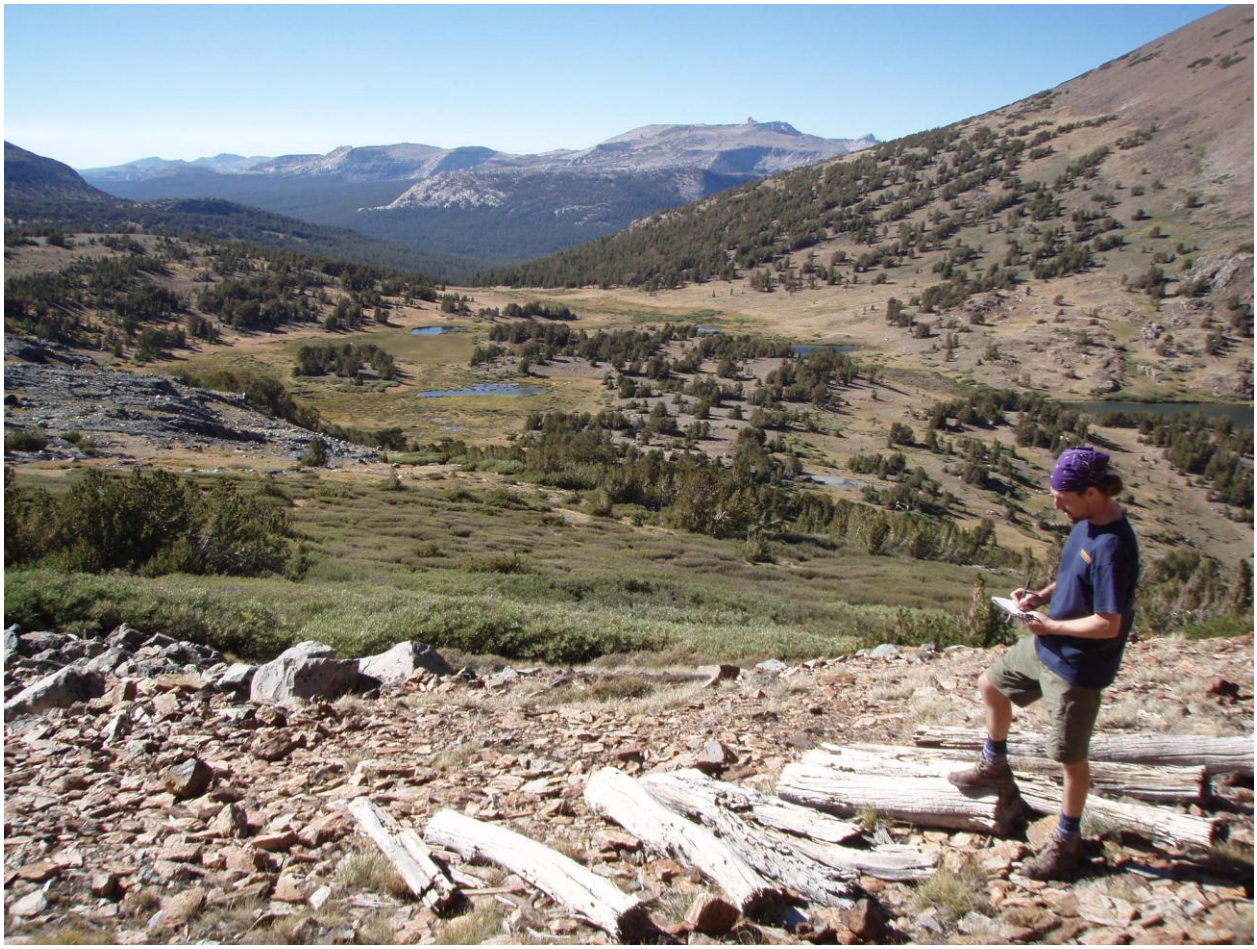
The three-year ARRA-funded NPS project began in 2009 with the AMLU providing technical assistance for around 500 abandoned mine closures in national parks. The work peaked in March 2012 when three guest scientists were hired through the Geological Survey of America's Geocorps program. By the completion of the inventory in 2013, the AMLU team had inventoried over 1,000 mine sites and 25,000 features throughout 13 different park units, with most inventory work taking place in Death Valley National Park, Joshua Tree National Monument, and Mojave National Preserve.

The large number of mine sites and features, and the variety of physical and logistic challenges encountered illustrate the magnitude of the NPS inventory. The AMLU team inventoried mine features under a variety of outdoor conditions including high altitude, extreme wind, heat and cold, and sleet and snow, typically in rough terrain with loose rocks and uneven footing. The AMLU team often hiked considerable distances carrying food, water, and gear off road or trail and into designated wilderness areas. Along with on-site data gathering in the field, the AMLU team was also busy researching historical literature on mine sites so that informed decisions could be made on how to balance public safety hazards of a mine with its cultural or wildlife significance.

Recreational wilderness driving and hiking is common in National Parks, and abandoned mine sites are sometimes a destination for more intrepid visitors. For this reason, the NPS desires that future remediation prioritization include even the most remote abandoned mines. Indeed,

this sense of urgency for remediation at remote locations was supported by AMLU staff investigations that regularly found evidence of visitation at even the most difficult to access sites.

The NPS inventory lays the foundation for the NPS to prioritize mine sites and seek funding for closure of hazardous mine features. This work protects both park visitors and wildlife that use the mines as habitat. The data gained from this inventory was delivered to the NPS in September 2013, bringing to close a truly epic "walk in the park."



GSA Guest Scientist Sean McCartney inventorying an abandoned mine in the Yosemite high country, elevation 11,200'. Snowpack and other weather considerations greatly limit the inventory window for high-elevation sites. Photo: Jon Mistchenko, AMLU.

Dawn at an AMLU campsite outside Joshua Tree NP. Over three years, AMLU staff camped for 185 person-nights in order to maximize efficiency of inventory work in remote areas. Through efficient planning and working flexibly, staff inventoried all park service land in 468 days. Photo: Jon Mistchenko, AMLU.

A hazardous mine feature being backfilled in an Off-Highway Vehicle Recreation Area, on BLM Ridgecrest Field Office land. Closure methods were tailored to each mine feature and included fencing, backfills, polyurethane foam plugs, bat gates, culvert gates, bat cupolas, and airflow grates. Photo: AMLU contractor.